Final

Subsequent Environmental Impact Report

for the

Construction and Management of an Artificial Reef in the Pacific Ocean Near San Clemente, California (Wheeler North Reef Expansion Project)

State Clearinghouse No. 1998031027
CSLC EIR Number: 685; PRC 8097.1

Lead Agency:
California State Lands Commission
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825

January 2019

Established in 1938

MISSION STATEMENT

The California State Lands Commission provides the people of California with effective stewardship of the lands, waterways, and resources entrusted to its care through preservation, restoration, enhancement, responsible economic development, and the promotion of public access.

CEQA DOCUMENT WEBSITE
www.slc.ca.gov/Info/CEQA.html

Existing Wheeler North Reef Geographic Location

Latitude 33° 25’ 01.7” North, Longitude 117° 37’ 45.0” West

Latitude 33° 23’ 15.2” North, Longitude 117° 36’ 20.0” West

Latitude 33° 22’ 57.6” North, Longitude 117° 36’ 45.2” West

Latitude 33° 24’ 47.3” North, Longitude 117° 38’ 14.9” West

(North American Datum 1983)

Photo credit: Richard Herrmann

University of California, Santa Barbara diver measuring the size and density of giant kelp during annual performance monitoring at Wheeler North Reef (Source: http://marinemitigation.msi.ucsb.edu/mitigation_projects/artificial_reef/mitigation_phase/index.html)

Document prepared in coordination with:

DUDEK

EXECUTIVE SUMMARY

BACKGROUND AND PROJECT LOCATION

Southern California Edison (SCE or Applicant) has applied to the California State Lands Commission (CSLC or Commission) for a lease to expand the existing Wheeler North Reef (hereinafter Wheeler North Reef Expansion Project [Project]). **The reef expansion is required by the California Coastal Commission (CCC) pursuant to Coastal Development Permit (CDP) No. 6-81-370-A**. The Commission, as lead agency under the California Environmental Quality Act (CEQA; Pub. Resources Code, § 21000 et seq.) and State CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.), prepared this Subsequent Environmental Impact Report (EIR) to analyze the Project's potential significant impacts.

In 1999, the Commission certified a Program EIR and issued Lease No. PRC 8097, a General Lease – Non-Income Producing, to SCE to build and maintain the original reef as mitigation for the loss of kelp forest resources resulting from once-through cooling at San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 (Item 72 and Item 73, June 14, 1999). The reef, which was constructed in two phases in 1999 and 2008 (Phase 1, Experimental Reef, and Phase 2, Mitigation Reef), is located in water depths of about 38 to 49 feet, approximately 0.6 mile offshore of the city of San Clemente (City), Orange County (Figure ES-1). The San Clemente City Pier lies adjacent to the north end of the reef, and San Mateo Point is about 2.5 miles to the south. City and state beaches adjacent to the reef include Pier, T-Street, Lasuen, Riviera, Calafia (State Park), and San Clemente State Beaches, while Doheny State Beach and Dana Point Harbor are north of the Project site.

PROJECT DESCRIPTION

The proposed Project would expand the existing 174.4-acre Wheeler North Reef and create up to 210.6 additional acres of kelp reef by placing up to 175,000 tons of quarried rock in a low-relief fashion in 23 new subsea polygon areas adjacent to the existing Wheeler North Reef. As proposed, reef expansion would begin in mid-May 2019 (after the lobster season) and continue through to September 30, 2019. Rock would be obtained from existing quarries on Santa Catalina Island and, if needed, in Ensenada, Mexico (Figure ES-2). These quarries would also serve as the rock stockpile location prior to and during construction.

The Project includes the transport from the quarries to the Project site of approximately 4,000 tons of quarry rock per trip using one or two barges towed by a tugboat, and the transport of empty supply barges back to the quarries for additional rock. A temporary construction footprint would surround the 210-acre reef expansion area to allow for anchoring of the barges. Rock would be placed on the seafloor in the Project area using a front-end ~~track~~ loader on the supply barge (Figure ES-3).

FIGURE ES-1
Project Location
Wheeler North Reef SEIR

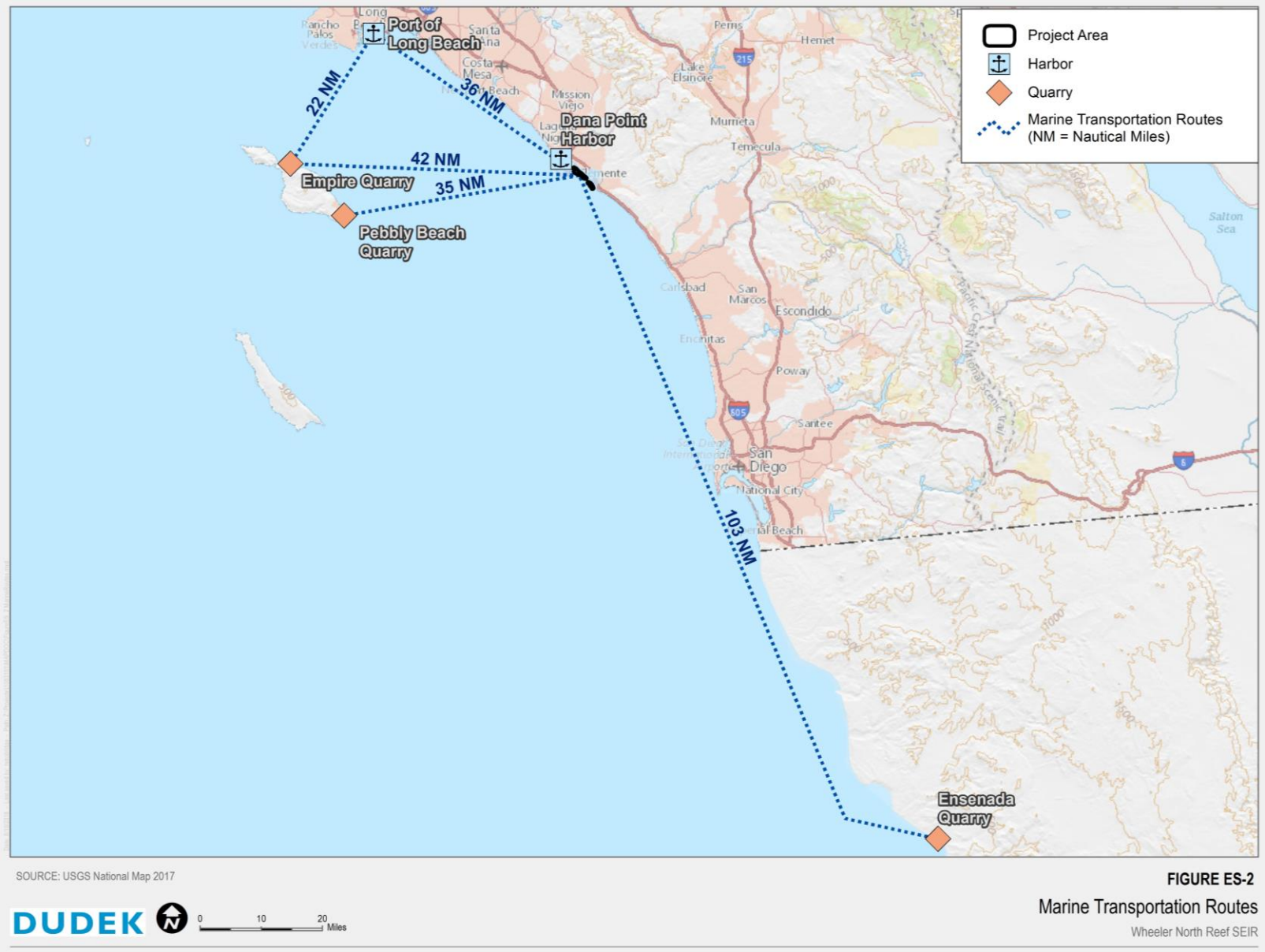


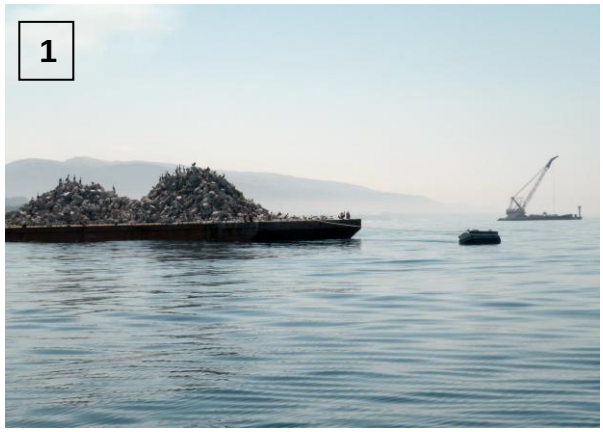
FIGURE ES-2

Marine Transportation Routes

Wheeler North Reef SEIR

Figure ES-3. Proposed Reef Construction Summary

Quarry rock would be transported by supply barge to the Project site. An extra supply barge would be anchored nearby to be swapped over when the first supply barge is emptied.



Supply barges would be tied to the derrick barge when rock is being placed. The derrick crane located on the derrick barge would lift the front-end loader onto the supply barge.

A Global Positioning System (GPS)-positioned derrick barge secured at a six-point anchorage would remain at the Project site throughout the construction season. It would be periodically re-anchored using differential GPS.*

The front-end loader would push quarry rock off the supply barge to achieve the desired kelp reef coverage adjacent to the existing Wheeler North Reef.

* The Positional accuracy of the differential GPS system is estimated at 1 to 2 feet with the barge operator able to hold position to within a tolerance of 6 feet.

SUMMARY OF PROJECT OBJECTIVES, PURPOSE, AND NEED

Under CCC CDP No. 6-81-370-A, SCE would receive mitigation credit if it met several performance standards established to measure the success of the Wheeler North Reef for a period equal to the operating life of SONGS. The performance standards required in the CCC CDP No. 6-81-370-A are:

1. The mitigation reef shall be constructed of rock, concrete, or a combination of these materials.
2. The total area of the mitigation reef (including the experimental reef modules) shall be no less than 150 acres.

3. At least 42 percent, but no more than 86 percent, of the mitigation reef area shall be covered by exposed hard substrate.
4. At least 90 percent of the exposed hard substrate must remain available for attachment by reef biota.
5. The artificial reef(s) shall sustain 150 acres of medium- to high-density giant kelp.
6. The standing stock of fish at the mitigation reef shall be at least 28 tons.
7. The resident fish assemblage shall have a total density and number of species similar to natural reefs within the region.
8. Fish reproductive rates shall be similar to natural reefs within the region.
9. The total density and number of species of young-of-year fish shall be similar to natural reefs within the region.
10. Fish production shall be similar to natural reefs within the region.
11. The benthic community (both algae and macroinvertebrates) shall have coverage or density and number of species similar to natural reefs within the region.
12. The benthic community shall provide food-chain support for fish similar to natural reefs within the region.
13. The important functions of the reef shall not be impaired by undesirable or invasive benthic species (e.g., sea urchins or *Cryptoarachnidium*).

To assess Wheeler North Reef's performance, a team of independent scientists conducted annual monitoring of the physical and biological attributes of the reef (and, for reference, the nearby San Mateo Kelp Bed and Barn Kelp Bed) since the Phase 2 build-out of the reef in 2008. The performance standards listed above were divided into absolute standards, or standards that are measured against a fixed value at Wheeler North Reef only (i.e., 150 acres of giant kelp, 28 tons of fish biomass) and relative standards, or standards that must be similar to the reference reefs (i.e., fish reproductive rates shall be similar to natural reefs in the region). Although ~~T~~the Wheeler North Reef meets multiple performance standards, the reef has not met both the absolute and the relative performance standard~~s~~ that requires a standing fish stock of 28 tons in any of the years it has been monitored (2009 to present) ~~in any year~~; therefore, SCE has not yet received any mitigation credit for the reef (Table ES-1). Analyses of monitoring data collected from the Wheeler North Reef show that additional reef acreage is needed for the Wheeler North Reef to meet all of the performance standards.

SCE proposes to supplement the existing reef to meet the following Project objectives:

- Consistently support a fish standing stock of 28 tons to comply with the absolute standard
- Ensure that the mitigation reef can continue to meet all other absolute and relative CDP conditions even during years of unfavorable oceanic conditions

Table ES-1. Summary of Wheeler North Reef Mitigation Compliance

	2009	2010	2011	2012	2013	2014	2015	2016
Mitigation Credit?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**
All Relative Standards	✓	✓	✓	✓	✓	✓	✓	✓
Hard Substrate	✓	✓	✓	✓	✓	✓	✓	✓
Giant Kelp Area	○	✓	✓	✓	✓	✓	✓	○
Fish Standing Stock	○	○	○	○	○	○	○	○
Invasive and Undesirable Species	✓	✓	✓	✓	✓	✓	✓	✓

✓ = Permit standard met; ○ = Permit Standard not met

SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This Subsequent EIR identifies potential significant impacts of the Project on the following environmental issue areas:

- Biological Resources (Marine)
- Aesthetics
- Air Quality
- Cultural and Paleontological Resources
- Cultural Resources – Tribal
- Geology and Coastal Processes
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Mineral Resources
- Noise
- Ocean Water Quality
- Public Services
- Recreation
- Transportation (Marine)

Impacts within each affected environmental issue area are analyzed in relation to pertinent significance criteria. Impacts are classified as one of five categories.

Significant and Unavoidable	A substantial or potentially substantial adverse change from the environmental baseline that meets or exceeds significance criteria, where either no feasible mitigation can be implemented or the impact remains significant after implementation of mitigation measures.
Less than Significant with Mitigation	A substantial or potentially substantial adverse change from the environmental baseline that can be avoided or reduced to below applicable significance thresholds.
Less than Significant	An adverse impact that does not meet or exceed the significance criteria of a particular resource area and, therefore, does not require mitigation.
Beneficial	An impact that would result an improvement to the physical environment relative to baseline conditions.
No Impact	A change associated with the Project that would not result in an impact to the physical environment relative to baseline conditions.

Potential significant environmental impacts anticipated during Project implementation are discussed in Section 4.0, *Environmental Impact Analysis*. With the implementation of Applicant-Proposed Measures (APMs) and mitigation measures (MMs) identified in this Subsequent EIR (see Tables ES-3 and ES-4 at the end of this Executive Summary and

Section 7.0, *Mitigation Monitoring Program*), the Project would have no significant impacts that cannot be avoided. The CSLC staff or CSLC-contracted monitors will monitor all MMs and APMs during implementation of the Mitigation Monitoring Program.

SUMMARY OF ALTERNATIVES TO THE PROPOSED PROJECT

CEQA requires identification and evaluation in an EIR of a reasonable range of alternatives to a proposed project plus a "no project" alternative to allow decision makers to compare the impacts of approving the project with the impacts of not approving the project. Pursuant to State CEQA Guidelines section 15126.6, subdivision (a), an EIR need only consider a range of feasible alternatives that will foster informed decision making and public participation; therefore, while an EIR need not consider every conceivable alternative, an EIR must include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. The range of potential alternatives that must be and are considered in this Subsequent EIR is limited to those that would feasibly attain most of the Project objectives while avoiding or substantially reducing any of the significant effects of the Project. Alternatives that were considered but rejected are identified and accompanied by brief, fact-based explanations of the reasons for rejection. Among the factors that may have been used to eliminate alternatives from detailed consideration, as permitted by CEQA, are: (1) a failure to meet most of the proposed Project objectives; (2) infeasibility; or (3) inability to avoid significant impacts (State CEQA Guidelines § 15126.6, subd. (c)). Alternatives carried forward for analysis in this Subsequent EIR are summarized below and in Tables ES-2 and ES-4.

- **No Project Alternative.** The Applicant's request for an amendment of the CSLC lease would not be approved, and the reef would not be expanded.
- **Low-Relief, Low-Coverage, Less Northward Expansion Reef.** This alternative places approximately 150,000 tons of quarry rock in nine subsea polygon areas over 200 acres. Compared to the proposed Project, the expansion would extend only 1.9 miles northwest of the existing reef, thus reducing the amount of reef face exposed to the ocean. Decreasing the perimeter-to-area ratio could decrease the fish biomass per unit of placed rock compared to the proposed Project (Wilson et al. 1990).
- **Low-Relief, Medium-Coverage Reef.** This alternative places approximately 225,000 tons of quarry rock within 15 subsea polygon areas over 125 acres. Compared to the proposed Project, a greater density of substrate would be covered by rock and approximately 12 additional barge trips would be required to complete the reef expansion.
- **Low-Relief, High-Coverage Reef.** This alternative places approximately 288,750 tons of quarry rock within 37 subsea polygon areas over 105 acres. Compared to the proposed Project, this design would require almost 93 percent more rock, and would use smaller polygons to increase the perimeter-to-area ratio and potentially

fish biomass per unit of placed rock (Wilson et al. 1990); however, the perimeters would be less available to fish, as each perimeter area would be near another perimeter. The analysis assumes that most of the additional rock would be obtained from a quarry in Ensenada, Mexico (not enough rock would be available at Santa Catalina).

- **Two-Season Construction.** If not enough rock can be obtained in 2019, the Project would be completed in two construction periods (2019 to 2020) using the same reef design, construction methods, staffing, and construction times (mid-May [after the lobster season] through September 30) as the proposed Project. This analysis assumes that all 44 barge trips would be to and from the Santa Catalina Island quarries (i.e., no trips to or from Mexico).
- **Two-Season Construction 2019–2020 Period Alternative** - In the event that the entire reef cannot be constructed in 2019, SCE would propose to construct the Project over two construction seasons. Because more time would be available to stockpile quarry rock, it is possible that all of the quarry rock could be sourced from the Catalina quarries; however, this analysis assumes that up to 6 trips to and from the Mexican quarry would be required, and the remaining 38 trips would be to and from the Catalina quarries. Construction would be expected to begin in mid-May 2019 and continue until no later than September 30, 2019, then construction would begin again in mid-May 2020 and continue no later than September 30, 2020. The reef design, construction methods, and staffing under this alternative would be the same as described for the Project.

Table ES-2. Summary of Project and Alternatives

	Estimated Acres	Tons Rock Used	# Subsea Polygons	% Substrate Coverage	Construction Date(s)
Proposed Project	210.6	175,000	23	42	2019
No Project Alternative	0	0	0	0	N/A
Low-Relief, Low-Coverage, Less Northward Expansion	200	150,000	9	42	2019
Low-Relief, Medium-Coverage	125	225,000	15	63	2019
Low-Relief, High-Coverage	105	288,750	37	81	2019
Two-Season Construction	210.6	175,000	23	42	2019–2020

ALTERNATIVES NOT CONSIDERED FOR FULL EVALUATION

Alternatives considered in the 1999 Program EIR were reconsidered as alternatives to the proposed Project and were modified to account for the presence of the existing reef and the Project objectives. These alternatives, however, were again eliminated from consideration in this Subsequent EIR because they were outside of the scope of this

Subsequent EIR, or were determined to be infeasible, did not clearly offer the potential to reduce significant environmental impacts, or did not achieve most of the Project objectives (refer to Section 5.3, *Alternatives Eliminated from Further Consideration*, for explanation). These alternatives include:

- Combination of Reef at Multiple Locations
- Northern San Clemente Site
- Farther Offshore from Existing Wheeler North Reef
- Compound Reef at San Clemente
- Compound Reefs at Multiple Locations
- Compound Reefs at Big Sycamore Canyon or Pitas Point
- Kelp Planting

COMPARISON OF PROPOSED PROJECT AND ENVIRONMENTALLY SUPERIOR ALTERNATIVE

State CEQA Guidelines section 15126.6, subdivision (e)(2) states, in part, that an EIR shall identify an environmentally superior alternative among the other alternatives "if the environmentally superior alternative is the 'No Project' alternative." Table ES-4 compares the proposed Project impacts with those of the alternatives. Based on the analysis contained within the Subsequent EIR, the Commission has determined that the proposed Project, not the No Project Alternative, is the environmentally superior alternative, because under the No Project Alternative, the existing Wheeler North Reef would not be expanded and would likely continue to be out of compliance with the CCC's CDP requirements to mitigate for impacts associated with the operation of SONGS Units 2 and 3 (see Section 6.5, *Comparison of Proposed Action and Alternatives and Environmentally Superior Alternative*).

KNOWN AREAS OF CONTROVERSY OR UNRESOLVED ISSUES

Pursuant to State CEQA Guidelines section 15123, the EIR shall identify "areas of controversy known to the lead agency including issues raised by agencies and the public." During public scoping, concern was expressed about Project changes to waves, increase in kelp wrack on local beaches, effects of the reef on fishing opportunities on existing rocky reefs, and the effectiveness of the Project in increasing the standing fish stock. See Appendix A, *Public Scoping Documents*, for the Notice of Preparation (NOP), copies of the NOP comment letters, and transcripts from the public meeting.

ORGANIZATION OF SUBSEQUENT EIR

The Subsequent EIR is presented in nine sections:

- **Section 1.0 – Introduction** provides background on the Project, previous related environmental review, and the CEQA process.

- **Section 2.0** – **Project Description** describes the Project, its location, construction activities, monitoring, and schedule.
- **Section 3.0 – Cumulative Projects** identifies the projects that are analyzed for potential cumulative effects and the Subsequent EIR's approach to cumulative impact analysis.
- **Section 4.0 – Environmental Impact Analysis** describes existing environmental conditions, impacts of the Project, mitigation measures, and evaluates cumulative impacts.
- **Section 5.0 – Project Alternatives Analysis** describes the alternatives screening methodology, alternatives screened from full evaluation, and alternatives carried forward for analysis, and analyzes impacts of each alternative carried forward.
- **Section 6.0 – Other Required CEQA Sections and Environmentally Superior Alternative** addresses other required CEQA elements, including significant and irreversible environmental and growth-inducing impacts, comparison of the Project and alternatives, and identification of the environmentally superior alternative.
- **Section 7.0 – Mitigation Monitoring Program** describes the monitoring authority, enforcement and mitigation compliance responsibilities, and general monitoring procedures, and presents the mitigation monitoring table.
- **Section 8.0 – Other Commission Considerations** presents information relevant to the Commission's consideration of SCE's lease application that are in addition to the environmental review required pursuant to CEQA. These include: (1) climate change and sea-level rise considerations; (2) commercial fishing (socioeconomics); (3) environmental justice; and (4) state tide and submerged lands identified as possessing significant environmental values within the Commission's Significant Lands Inventory. Other considerations may also be addressed in the staff report presented at the time of the Commission's consideration of the lease application.
- **Section 9.0 – Report Preparation Sources and References** lists the persons involved in preparation of the Subsequent EIR and the reference materials used.

The Subsequent EIR also contains the following appendices:

- **Appendix A** – Public Scoping Documents (Index to Where Each NOP Comment is Addressed in the Subsequent EIR, Public Scoping Comments, Hearing Transcripts, and NOP)
- **Appendix B** – *2018 Monitoring Plan for the SONGS' Reef Mitigation Project*
- **Appendix C** – Air Quality Supplementary Information
- **Appendix D** – Abridged List of Major Federal and State Laws, Regulations, and Policies Potentially Applicable to the Wheeler North Reef Expansion Project

- **Appendix E** – *Final Program Environmental Impact Report for the Construction and Management of an Artificial Reef in the Pacific Ocean Near San Clemente, California*
- **Appendix F** – Kelp Wrack Monitoring for Existing Wheeler North Reef
- **Appendix G** – Cultural Resources Records
- **Appendix H** – Draft Subsequent EIR Distribution List

Table ES-3. Impact and Mitigation Summary (Proposed Project)

Impact	Impact Class[1]	Applicant-Proposed Measures/Recommended MMs
BIOLOGICAL RESOURCES (MARINE)		
BIO-1: Existing Giant Kelp Habitat Quality	LTS	None recommended
BIO-2: Introduction or Enhancement of Non-Native Species	LTSM	**MM BIO-2:** Prevent Import of Non-Native Species
BIO-3: Disturbance or Injury to Marine Mammals and Turtles from Construction	LTSM	**MM BIO-3:** Marine Wildlife Monitoring Plan
BIO-4: Accidental Spills or Vessel Grounding May Result in Habitat Degradation or Species Mortality	LTSM	**MM BIO-4:** Spill and Grounding Contingency Plan
BIO-5: Monitoring Activities	NI	None recommended
BIO-6: Adverse Effects to Soft Sediment Habitat and Managed Fish Species	LTS	**APM-1:** Anchoring Plan
AESTHETICS		
AES-1: Affect a Scenic Vista	LTS	None recommended
AES-2: Damage Scenic Resources	NI	
AES-3: Degrade Visual Character or Quality of Site and its Surroundings	LTS	
AES-4: Create Light or Glare	LTS	
AIR QUALITY		
AQ-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	LTSM	**MM AQ-1a:** Nitrogen Oxides (NO_X) Emission Reduction **MM AQ-1b:** Nitrogen Oxides (NO_X) Emission Offset Credits
AQ-2: Violation of Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation	LTSM	
AQ-3: Result in a Cumulatively Considerable Net Increase of Any Criteria Air Pollutant for Which the Project Region is Nonattainment	LTSM	
AQ-4: Expose Sensitive Receptors to Substantial Pollutant Concentrations	LTS	None recommended
AQ-5: Create Objectionable Odors Affecting a Substantial Number of People	LTS	None recommended

Table ES-3. Impact and Mitigation Summary (Proposed Project)

Impact	Impact Class[1]	Applicant-Proposed Measures/Recommended MMs
CULTURAL AND PALEONTOLOGICAL RESOURCES		
CUL-1: Cause a Substantial Adverse Change in the Significance of an Archaeological or Historical Resource	LTSM	**MM CR-1a:** Archaeological and Tribal Monitoring **MM CR-1b:** Unanticipated Cultural/Tribal Resources
CUL-2: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geologic Feature	LTSM	**MM CR-2:** Unanticipated Paleontological Resources
CUL-3: Disturb any Human Remains, Including those Interred Outside of Dedicated Cemeteries	LTSM	**MM CR-3:** Appropriate Treatment of Human Remains
CULTURAL RESOURCES—TRIBAL		
TCR-1: Cause a Substantial Adverse Change in the Significance of a Tribal Cultural Resource	LTSM	**MM CR-1a:** Archaeological and Tribal Monitoring **MM CR-1b:** Unanticipated Cultural/Tribal Resources **MM CR-3:** Appropriate Treatment of Human Remains
GEOLOGY AND COASTAL PROCESSES		
GEO-1: Substantial Increase or Decrease in Rates of Beach Erosion	LTS	None recommended
GEO-2: Substantial Change in Surf Characteristics	LTS	
GEO-3: Substantially Inhibit Natural Coastal Processes	LTS	
GREENHOUSE GAS EMISSIONS		
GHG-1: Generate GHG Emissions, Either Directly or Indirectly, That May Have a Significant Impact on the Environment	LTS	None recommended
GHG-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing GHG Emissions	LTS	
HAZARDS AND HAZARDOUS MATERIALS		
HAZ-1: Routine Transport, Use, or Disposal of Hazardous Materials	LTSM	**MM HAZ-1a:** Spill Prevention and Response Plan

Table ES-3. Impact and Mitigation Summary (Proposed Project)

Impact	Impact Class[1]	Applicant-Proposed Measures/Recommended MMs
HAZ-2: Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment	LTSM	**MM HAZ-1b:** Prepare for Inclement Weather Condition
MINERAL RESOURCES		
MIN-1: Availability of Oil, Gas, or Geothermal Resources	NI	None recommended
MIN-2: Availability of a Local Sand, Gravel, or Concrete Aggregate Mineral Resource Recovery Site	NI	
MIN-3: Availability of Local and Regional Construction Rock Resources	LTS	
NOISE		
NOI-1: Expose Persons to or Generation of Noise Levels in Excess of Standards	LTS	None recommended
NOI-2: Expose Persons to or Generation of Excessive Groundborne Vibration or Noise Levels	LTS	
NOI-3: Substantial Permanent, Temporary, or Periodic Increase in Ambient Noise Levels	LTS	
OCEAN WATER QUALITY		
OWQ-1: Impair Marine Water Quality	LTSM	**MM OWQ-1:** Compliance with Vessel General Permit **MM HAZ-1a:** Spill Prevention and Response Plan
OWQ-2: Discharge of Pollutants into an "Impaired" Waterbody under Clean Water Act Section 303(d)	NI	None recommended
PUBLIC SERVICES		
PUB-1: Need for Emergency Response Services During Construction of the Artificial Reef	LTSM	**MM PUB-1:** Notification of Harbor Patrol
PUB-2: Increase in the Need for Beach Cleanup as a Result of Accumulated Kelp Wrack, Rock, or Concrete from to the Artificial Reef	LTS	None recommended

Table ES-3. Impact and Mitigation Summary (Proposed Project)

Impact	Impact Class[1]	Applicant-Proposed Measures/Recommended MMs
RECREATION		
REC-1: Prevent Access to Recreational Sites or Disturb Users of Recreational Facilities during Times of Peak Use	LTS	**APM-3:** Local Notice to Mariners
REC-2: Degradation of a Significant Recreational Resource	LTS	None recommended
REC-3: Substantial Reduction in the Type, Quality or Quantity of Recreational Fishing Activity or Recreational Fishery Yield	B	None recommended
TRANSPORTATION (MARINE)		
MT-1: Reduce the Existing Level of Safety for Navigating Vessels or Increase the Potential for Marine Vessel Accidents	LTS	**APM-2:** Forecast Notification **APM-3:** Local Notice to Mariners

Note: [1] Impact Class: B = Beneficial (Green); LTS = Less than Significant; LTSM = Less than Significant with Mitigation; NI = No Impact.

Table ES-4. Summary of Impacts: Proposed Project and Alternatives

Impact	Impact Class[1]					
	Proposed Project	No Project	Low-Relief Reef Type Alternatives			Two-Season Construction
			Low- Coverage, Less Northward Expansion	Medium-Coverage	High-Coverage	
SECTION 4.1, BIOLOGICAL RESOURCES (MARINE)						
BIO-1: Existing Giant Kelp Habitat Quality	LTS	NI	LTS	LTS	LTS	LTS
BIO-2: Introduction or Enhancement of Non-Native Species	LTSM	NI	LTSM	LTSM	LTSM	LTSM
BIO-3: Disturbance or Injury to Marine Mammals and Turtles from Construction	LTSM	NI	LTSM	LTSM	LTSM	LTSM
BIO-4: Accidental Spills or Vessel Grounding may result in Habitat Degradation or Species Mortality	LTSM	NI	LTSM	LTSM	LTSM	LTSM
BIO-5: Monitoring Activities	NI	NI	NI	NI	NI	NI
BIO-6: Adverse Effects to Soft Sediment Habitat and Managed Fish Species	LTS	NI	LTS	LTS	LTS	LTS
SECTION 4.2, AESTHETICS						
AES-1: Effect on a Scenic Vista	LTS	NI	LTS	LTS	LTS	LTS
AES-2: Damage to Scenic Resources	NI	NI	NI	NI	NI	NI
AES-3: Degrading the Existing Visual Character or Quality of the Site and its Surroundings	LTS	NI	LTS	LTS	LTS	LTS
AES-4: Creating a New Source of Light or Glare Affecting Day or Nighttime Views	LTS	NI	LTS	LTS	LTS	LTS
SECTION 4.3, AIR QUALITY						
AQ-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	LTSM	NI	LTSM	LTSM	LTSM	LTSM

Table ES-4. Summary of Impacts: Proposed Project and Alternatives

Impact	Impact Class[1]					
	Proposed Project	No Project	Low-Relief Reef Type Alternatives			Two-Season Construction
			Low- Coverage, Less Northward Expansion	Medium-Coverage	High-Coverage	
AQ-2: Violation of Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation	LTSM	NI	LTSM	LTSM	LTSM	LTSM
AQ-3: Result in a Cumulatively Considerable Net Increase of Any Criteria Air Pollutant for Which the Project Region is Nonattainment	LTSM	NI	LTSM	LTSM	LTSM	LTSM
AQ-4: Expose Sensitive Receptors to Substantial Pollutant Concentrations	LTS	NI	LTS	LTS	LTS	LTS
AQ-5: Create Objectionable Odors Affecting a Substantial Number of People	LTS	NI	LTS	LTS	LTS	LTS
SECTION 4.4, CULTURAL AND PALEONTOLOGICAL RESOURCES						
CR-1: Cause a substantial adverse change in the significance of an archaeological or historical resource	LTSM	NI	LTSM	LTSM	LTSM	LTSM
CR-2: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	LTSM	NI	LTSM	LTSM	LTSM	LTSM
CR-3: Disturb any human remains, including those interred outside of dedicated cemeteries	LTSM	NI	LTSM	LTSM	LTSM	LTSM
SECTION 4.5, CULTURAL RESOURCES—TRIBAL						
TCR-1: Cause a substantial adverse change in the significance of a Tribal cultural resource	LTSM	NI	LTSM	LTSM	LTSM	LTSM

Table ES-4. Summary of Impacts: Proposed Project and Alternatives

Impact	Impact Class[1]					
	Proposed Project	No Project	Low-Relief Reef Type Alternatives			Two-Season Construction
			Low- Coverage, Less Northward Expansion	Medium-Coverage	High-Coverage	
SECTION 4.6, GEOLOGY AND COASTAL PROCESSES						
GEO-1: Substantial Increase or Decrease in Rates of Beach Erosion	LTS	NI	LTS	LTS	LTS	LTS
GEO-2: Substantial Change in Surf Characteristics	LTS	NI	LTS	LTS	LTS	LTS
GEO-3: Substantially Inhibit Natural Coastal Processes	LTS	NI	LTS	LTS	LTS	LTS
SECTION 4.7, GREENHOUSE GAS EMISSIONS						
GHG-1: Directly or Indirectly Generate GHG Emissions	LTS	NI	LTS	LTS	LTS	LTS
GHG-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing GHG Emissions	LTS	NI	LTS	LTS	LTS	LTS
SECTION 4.8, HAZARDS AND HAZARDOUS MATERIALS						
HAZ-1: Routine Transport, Use, or Disposal of Hazardous Materials	LTSM	NI	LTSM	LTSM	LTSM	LTSM
HAZ-2: Reasonably Foreseeable Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment	LTSM	NI	LTSM	LTSM	LTSM	LTSM
SECTION 4.9, MINERAL RESOURCES						
MIN-1: Availability of Oil, Gas, or Geothermal Resources	NI	NI	NI	NI	NI	NI
MIN-2: Availability of a Local Sand, Gravel, or Concrete Aggregate Mineral Resource Recovery Site	NI	NI	NI	NI	NI	NI

Table ES-4. Summary of Impacts: Proposed Project and Alternatives

Impact	Impact Class[1]					
	Proposed Project	No Project	Low-Relief Reef Type Alternatives			Two-Season Construction
			Low- Coverage, Less Northward Expansion	Medium-Coverage	High-Coverage	
MIN-3: Availability of Local and Regional Construction Rock Resources	LTS	NI	LTS	LTS	LTS	LTS
SECTION 4.10, NOISE						
NOI-1: Expose Persons to or Generation of Noise Levels in Excess of Standards	LTS	NI	LTS	LTS	LTS	LTS
NOI-2: Expose Persons to or Generation of Excessive Groundborne Vibration or Noise Levels	LTS	NI	LTS	LTS	LTS	LTS
NOI-3: Substantial Permanent, Temporary, or Periodic Increase in Ambient Noise Levels	LTS	NI	LTS	LTS	LTS	LTS
SECTION 4.11, OCEAN WATER QUALITY						
OWQ-1: Impairment of Marine Water Quality	LTSM	NI	LTSM	LTSM	LTSM	LTSM
OWQ-2: Discharge of Pollutants into an "Impaired" Waterbody under Clean Water Act Section 303(d)	NI	NI	NI	NI	NI	NI
SECTION 4.12, PUBLIC SERVICES						
PUB-1: Need for Emergency Response Services during Construction of the Artificial Reef	LTSM	NI	LTSM	LTSM	LTSM	LTSM
PUB-2: Need for Beach Cleanup as a Result of Accumulated Kelp Wrack, Rock, or Concrete from the Artificial Reef	LTS	NI	LTS	LTS	LTS	LTS

Table ES-4. Summary of Impacts: Proposed Project and Alternatives

Impact	Impact Class[1]					
	Proposed Project	No Project	Low-Relief Reef Type Alternatives			Two-Season Construction
			Low- Coverage, Less Northward Expansion	Medium-Coverage	High-Coverage	
SECTION 4.13, RECREATION						
REC-1: Prevent Access to Recreational Sites or Disturb Users of Recreational Facilities during Times of Peak Use	LTS	NI	LTS	LTS	LTS	LTS
REC-2: Degradation of a Significant Recreational Resource	LTS	NI	LTS	LTS	LTS	LTS
REC-3: Substantial Change in the Type, Quality or Quantity of Recreational Fishing Activity or Yield	B	NI	B	B	B	B
SECTION 4.14, TRANSPORTATION (MARINE)						
Impact MT-1: Reduce the Existing Level of Safety for Navigating Vessels or Increase the Potential for Marine Vessel Accidents	LTS	NI	LTS	LTS	LTS	LTS

Notes:[1] B = Beneficial (Green); LTS = Less than Significant; LTSM = Less than Significant with Mitigation; NI = No Impact.